RECEIVED
CENTRAL FAX CENTER
MAR 2 6 2007

REMARKS

Claims 1-6, 8-17 and 36-39 are pending in this application. claims 12, 38 and 39 are withdrawn from consideration. Claims 1-6, 8-11, 13-17, 36 and 37 stand rejected under 35 USC 103(a) as being unpatentable over Wolfa in view of Young and in view of Strom and in view of O'Brien. Claims 16, 17 and 36 stand rejected under 35 USC 103(a) as being unpatentable over Wolfa in view of Young and in view of Strom and in view of O'Brien and further in view of Rigney and in view of Watson.

Withdrawn claims 12, 38 and 39 are cancelled herein.

The Applicants appreciate the withdrawal of the previous grounds for rejection.

Rejection of claims 1-6, 8-11, 13-17, 36 and 37:

Independent claim 1 includes the limitations of "forming the continuous gap by: exposing the top surface to a first pass of laser energy having a first parameter to form the continuous gap; and exposing the continuous gap to a second pass of laser energy having a second parameter different than the first parameter to change a geometry of the continuous gap." The Examiner appreciates that the primary reference to Wolfa lacks such limitations, so he looks to the secondary references and states "Young et al and Strom et al and O'Brien et al all describe multiple passes of a laser and all describe multiple laser energy parameters associated with the passes. The use of multiple passes and multiple laser energy parameters in a laser cutting process would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because they provide variability to processes of manufacture in laser processing of ceramics."

While it is well known that lasers have multiple energy parameters (e.g. power, frequency, beam size, etc.), it is not simply the existence of the multiple energy parameters that is claimed in the present invention, but it is the changing of such parameters from a first pass to a second pass when forming a gap in order to change a geometry of the gap that is specified in claim 1. None of the cited prior art

PAGE 7/10 * RCVD AT 3/26/2007 7:00:34 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-2/18 * DNIS:2738300 * CSID:4079267720 * DURATION (mm-ss):02-54

references teaches or suggests the changing of a laser energy parameter from one pass to another in the same gap.

Young teaches away from claim 1 by describing a process wherein a laser beam is shaped to have a circular beam cross-section by using a mask, and then using the exact same beam to make a plurality of passes as the beam is stepped along a seal ring face. Because the edges of the beam are rounded, they remove less material along the edges of the resultant groove/gap, so when two adjacent beam passes overlap, there is no danger of removing too much material in the overlap area. The control variable in Young is the amount of overlap between adjacent passes (paragraph 0015). The only change in laser beam parameters suggested in Young is from one gap to another. Young never teaches or suggests making two passes in a single groove/gap while changing a laser beam parameter on the second pass to change a geometry of the gap. Thus, the combination of Young with Wolfa fails to support the rejection of the claims under 35 USC 103.

Similarly, Strom also teaches away from the claimed limitations of changing of a laser parameter from a first pass to a second pass over the same gap. Strom describes a continuous side-by-side laser cutting path (column 5, lines 26-28) which indicates <u>unchanging</u> laser parameters. Thus, the combination of Strom with Wolfa fails to support the rejection of the claims under 35 USC 103.

Finally, the combination of O'Brien with Wolfa also fails to teach all of the claim 1 limitations and fails to make claim 1 obvious. O'Brien describes a process of scanning a laser beam over a plurality of short segments rather than making a cut with one long continuous pass of laser energy. While O'Brien does mention at column 2, lines 64-66 that various laser parameters can be manipulated, a complete reading of O'Brien reveals no teaching or suggestion to change any such parameter from a first pass to a second pass over the same gap to change a geometry of the gap. To the contrary, at column 15, lines 45-55 O'Brien describes making a cut with multiple passes, and rather than changing the laser parameters (focal length) as the cut depth increases between passes, O'Brien teaches that the mechanical positioning system should be adjusted vertically to keep the laser focus in position as the cut deepens. This teaches directly away from the present invention. And while he acknowledges

that laser parameters could be changed during any one pass, O'Brien specifically teaches at column 12, lines 37-41 that "it is preferred to maintain the same laser parameters during any given pass." Furthermore, when describing the embodiment of FIG. 10 at column 11, lines 7-25 where multiple passes are used, O'Brien specifically refers to a singular laser system output 32 as being used over many passes. Moreover, O'Brien acknowledges at column 16, lines 34-44 that laser parameters should be changed for different materials, but he makes no suggestion of changing such parameters from a first pass to a second pass in any given material. Finally, in the specific embodiments described by O'Brien, such as at column 15, line 56 through column 16, line 18, ranges of acceptable exemplary laser parameters are described for cutting silicon, but there is no teaching or suggestion that such parameters should be changed from pass to pass. To the contrary, column 16, lines 14-17 suggests that the parameters need only be changed for differing applications, such as for cutting different materials.

Thus, it is only the applicants' invention that suggests the modification of the cited prior art patents to include the changing of laser parameters from a first pass to a second pass in order to change the gap geometry. The combination of cited prior art patents do not support the rejection of independent claim 1 or any of its dependent claims under 35 USC 103(a) and the rejections should be withdrawn.

<u>Rejection of claims 16, 17 and 36:</u>

Claims 16 includes the limitations of "forming a first plurality of continuous gaps in a top surface of the first layer; depositing a second layer of ceramic insulating material on the top surface of the first layer; and forming a second plurality of continuous gaps in a top surface of the second layer." The Examiner appreciates that the four prior art patents cited against claim 1 fail to teach such limitations, and he adds the teaching of yet two more published patent applications in support of the rejection under 35 USC 103.

The Examiner states that "Both Rigney ... and Watson ... describe surface deposit of ceramic material, etching the surface, and <u>again depositing and laser</u>

grooving the surface ..." Contrary to the Examiner's assertion, neither Rigney nor Watson teach or suggest any such double layer of grooves.

Rigney specifically teaches away from forming any groove in the top surface layer at paragraph 0015 where he states that the repaired coating is blended with respect to the surrounding TBC ceramic top coat in order to maintain surface uniformity and smoothness, as dictated for aerodynamics.

Watson fails to describe any multiple layers of grooved material, but rather only multiple grooves in a single top layer, as illustrated in FIG. 1, with no underlying grooved layer.

Thus, the addition of Rigney and Watson to the other four cited references fails to support the rejection of claim 16 and its dependent claims 17 and 36 under 35 USC 103 and these rejections should be withdrawn.

Reconsideration of the amended application in view of the above remarks and allowance of claims 1-6, 8-11, 13-17, 36 and 37 are respectfully requested.

Respectfully submitted,

David G. Maire

David G. Maire (Reg. No. 34,865)
Beusse Wolter Sanks Mora & Maire, P.A.
390 North Orange Ave., Suite 2500
Orlando, FL 32801
Telephone: 407-926-7704